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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/971,172	11/14/97	GOODMAN	C

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
1647	29

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 08/971,172	Applicant(s) Goodman
	Examiner Sharon L. Turner, Ph.D.	Art Unit 1647

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 7-17-01 .

2a) ☒ This action is **FINAL.** 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 68-91 and 93-119 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 68-91 and 93-119 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

Response to Amendment

1. The amendment filed 7-17-01 has been entered into the record and has been fully considered. Claim 92 is canceled. Claims 68-91 and 93-119 are pending.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 68-91 and 93-119 stand rejected under 35 U.S.C. 101 as set forth in Paper No. 24, mailed 3-27-01 and as reiterated herein, because the claimed invention is not supported by either a specific and substantial, credible asserted utility or a well established utility.

Applicants argue that the invention relates to diagnostic probes specific to Robo proteins, which are important targets for therapeutic intervention and critical to developing therapy for spinal injuries as noted in applicant's references to the specification. Applicants argue that the claims are limited to diagnostic probes and that the polynucleotides encode polypeptides which elicit a corresponding Robo specific antibody. It is these probes that are proposed to be useful for tracing the presence of Robo expression in tissue.

Applicant's arguments filed 7-17-01 have been fully considered but are not persuasive. Applicant's arguments suggest that the claimed reagents are diagnostic, yet these arguments and the specification fail to define any "diagnosis" which is obtained through the use of the claimed expression markers as indicated. The specification fails to note how the particular expression

indicated by the probes evidences correlation of any specified disease, disorder or condition, see in particular p. 29, lines 14-17. Thus, it is unclear what diagnosis applicant's are asserting to provide. Further, applicants argue that the claims define important targets for therapeutic intervention and development of therapy for spinal cord injuries. Yet the specification fails to disclose how the claimed reagents should be used for any particular therapeutic benefit and fails to disclose how to use the claimed reagents as a beneficial therapy in spinal cord injury. The specification fails to evidence any specific target to promote therapeutic effect or alleviate any condition associated with spinal cord injury.

While the specification notes as taught by Seeger et al., Neuron 10(3):409-26, 1993 that Robo molecules are associated with neuronal midline crossing during a particular developmental stage, the specification and art fail to evidence how the claimed Robo molecules can be used to provide any benefit. Therefore applicants asserted "use" is not a specific and substantial utility because the artisan is un-apprised of the "real world use" or significance of marking Robo expression. Without an indication of how the discovered findings (directed to midline crossing) can be utilized to provide a specific and substantial benefit, utility is lacking. It is also noted that there is no evidence that any prior art disclosure of Robo or Robo-type molecules is sufficient to establish a well known utility for the claimed reagents.

Thus, for the above noted reasons the claimed invention is not supported by either a specific and substantial, credible asserted utility or a well established utility.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 68-91 and 93-119 also stand rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial, credible asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

6. Claims 81, 100, 102-104, 113-114 stand rejected as set forth in Paper No. 24, mailed 3-27-01 and as set forth herein under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection. The isolated residues which specifically do not appear to be supported by the specification as originally filed are as follows;

Regarding residues 1-942 of SEQ ID NO:4, applicants argue that these residues are disclosed in Table 1 as filed. This argument has been fully considered but is not persuasive because claim 81 is directed to an isolated polynucleotide wherein the sequence comprises (a polynucleotide encoding) residues 1-942 of SEQ ID NO:4 (as depending from claim 79). While table 1 contains residues 1-942 of SEQ ID NO:4, these residues are merely provided in alignment with other Robo sequences as noted in the Figure legend at p. 4, lines 24-32. There is no

evidence as provided by the figure legend that the specific polynucleic acid fragments encoding residues 1-942 is a particular embodiment of the invention as contemplated in the specification.

Regarding residues 68-259 of SEQ ID NO:8, applicants argue that these residues are disclosed on p. 4, line 19 of the specification as filed. This argument has been fully considered but is not persuasive with respect to the recitation of claim 104 which recites "1-167, 68-259, 1-67 joined to 168-259" as claimed which does not appear to have support at p. 4, lines 19.

Regarding residues 1-284 of SEQ ID NO:10, applicants argue that these residues are disclosed in Table 1 as filed. This argument has been fully considered but is not persuasive because claim 114 is directed to an isolated polynucleotide wherein the sequence comprises (a polynucleotide encoding) residues 1-284 of SEQ ID NO:10 (as depending from claim 112). While table 1 contains residues 1-284 of SEQ ID NO:10, these residues are merely provided in alignment with other Robo sequences as noted in the Figure legend at p. 4, lines 24-32. There is no evidence as provided by the figure legend that the specific polynucleic acid fragments encoding residues 1-284 is a particular embodiment of the invention as contemplated in the specification.

Interpretation of Claim Amendments

7. It is noted by the examiner that applicant's claim amendments directed to polypeptides which elicit specific antibodies and to polynucleotides that provide specific hybridization probes, fail to further limit the recited polynucleotides of the subject claims. Instead the recitations

simply note intrinsic properties of the compositions as recited and thus the new limitations fail to obviate the rejections of record directed to the compositional subject matter.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 88-90 stand rejected under 35 U.S.C. 102(a) for the same reasons of record as set forth in Paper No. 24, mailed 3-27-01 for Sptrembl-11, O01632 of record, as being anticipated by Genbank Accession No. U88183, provided by applicants and created 2-14-97.

Applicants argue that O01632 was made of record in the action of 1/21/00 indicated on the PTO 892 as publicly available 7-1-97. Applicants note that next to the creation date was written public availability date. Applicants note as previously admitted on the record that O01632 is 1825710 released on 4-21-97 and encodes residues 424-1297 of SEQ ID NO:6. Applicants further note that on April 21, 97 Genbank released U88183 and 1825711. U88183 is described as the sequence of X chromosome cosmid ZK377 and its annotation includes predicted open reading frames including 1825710 and 1825711 which encode residues 1-423 of SEQ ID NO:6. Applicants assert that the action alleges that the publication date of U88183 is 2-14-97 but that no support or documentation was provided to applicant. It is noted that the closest date

applicants can ascertain for the 2-14-97 cited date is 2-13-97 which is the submission date for reference 3 of the cited report.

Applicant's arguments filed 7-17-01 have been fully considered but are not persuasive. The examiner agrees that the original rejection was made over O01632. The "created date" of a GenEmbl sequence is the public availability date based upon information obtained from the USPTO biotech library and Genbank Embl. Thus, the public availability date was noted as 7-1-97, see record. Subsequently, applicants argued that Genbank also released Accession Nos. 1825710, 1825711 and U88183 which contained residues 1-423 of instant SEQ ID NO:6. In the response received on 2-16-00 it is noted that applicants did indeed submit U88183 for consideration by the examiner. However such was not formally made of record on a PTO-1449. The copy provided to the examiner failed to note a "created date", the date the accession was created in the publicly available database. Therefore the record was obtained via the worldwide web by the examiner. The website is as follows; http://www.ebi.ac.uk/cgi-bin/emblfetch following arrival at this site U88183 was entered and the record was obtained. This duplicate record of U88183, originally provided by applicant is now subsequently provided to applicants for clarification and is cited on a PTO-892. The creation date noted on the record is 2-14-97. Thus, based on applicants arguments that the originally cited O01632 contains the same sequence as 1825710, 1825711 and U88183 provided by applicants, that the Accession No. of U88183 was created 2-14-97 and was publicly available on that date, and based on applicant's admission that U88183 is prior art and was publicly available from the Genbank database, this new Accession

No. Provided by applicants was incoroporated into the prior art rejection, based on applicant's admission. It appears only that the public availability dates of the Accession No is of issue. The attached copy of U88183 provides the creation date obtained by the examiner and is publicly reported as 2-14-97. Thus, the rejection is maintained.

10. Claims 108-110 stand rejected as set forth previously in Paper No. 24, mailed 3-27-01 and as set forth herein under 35 U.S.C. 102(a) as being anticipated by Genbank Accession No:Z95705, May 25, 1997 which shares 100% identity with SEQ ID NO:7, residues 1016-1891 and 1901-4956 over its entire length. Thus Z95705 anticipates the nucleic acids as claimed.

Applicants again argue that the supplemental 1.131 declaration exhibiting SEQ ID NO:7 and isolated in 1996, dated 4-24-97 obviates the rejection.

Applicants arguments filed 9-7-00 and 7-17-01 have been fully considered but are not persuasive. It is again noted that the 3' end of the Word document appears to differ significantly from SEQ ID NO:7, in particular beginning at approximately p.2, line 38 of the sequence. Therefore applicants have not shown possession of SEQ ID NO:7 because by a cursory examination the sequence of the word document does not appear to correspond to SEQ ID NO:7. As no alignment is provided applicants have not established that the word document corresponds with the claim. It is suggested that applicants point to page, line number and residue where their word document corresponds to the claimed residues of SEQ ID NO:7, particularly in the 3' end. The examiner's attempt to do so has failed to find a correlation of the claimed 3' end of the word

document with any of the corresponding residues claimed. Evidence that the sequences correspond is required.

11. Claims 94-95 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Genbank Accession No:U88183 as applied to claims 88-90 set forth above and further in view of Sambrook et al, Molecular Cloning, Cold Spring Harbor Labs, 1989, 16.1-16.16.

Applicants argue that U88183 is not prior art as noted above.

Applicant's arguments filed 7-17-01 have been considered but are not persuasive as U88183 was created 2-14-97. As set forth above Genbank Accession No:U88183 teaches consecutive residues of SEQ ID NO:6. However, U88183 does not teach the nucleic acids in a vector and host cell for the production of polypeptides as claimed in claims 94-95. The relative skill in the art is reflected by Sambrook et al which teach the expression of cloned DNA in mammalian cells using vector nucleic acids. Such vector and host cell materials were readily available, at the time of the invention. The skilled artisan is well apprised of such cloning techniques widely known in the art. It would have been prima facie obvious for one of skill in the art knowing the DNA of U88183, to clone U88183 into a vector and host cell using the techniques of Sambrook et al for the replication of the claimed nucleic acids, expression of the polypeptides, and subsequences thereof. One would have been motivated to clone such nucleic acids into a polypeptide expression vector in order to study the protein produced thereby from the cells. Further, one would have expected success based on the high skill in the art, the teachings of Sambrook et al and the publicly availability of numerous cell lines capable of expression. The

knowledge of the appropriate DNA sequence taught by U88183 in the prior art thus renders the claimed nucleic acids, vectors, host cells and method of producing the polypeptides obvious.

Status of Claims

13. No claims are allowed.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry of a general nature or relating to the status of this general application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Papers relating to this application may be submitted to Technology Center 1600, Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). Should applicant wish to FAX a response, the current FAX number for Group 1600 is (703) 308-4242.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon L. Turner, Ph.D. whose telephone number is (703) 308-0056. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Kunz can be reached at (703) 308-4623.

Sharon L. Turner, Ph.D.
October 9, 2001

CHRISTINE J. SAOUD
PRIMARY EXAMINER
Christine J. Saoud